TO:	Mr. Carl P. Garvey and Mr. M. Brendan Mullen (Revitalizing Auto Communities Environmental Response Trust) Mr. Alan J. Knauf and Ms. Linda R. Shaw (Knauf Shaw LLP)
FROM:	Katherine Lasseter, Jason Dittman, Jamie Combes, and Erin O'Connell (TIG Environmental) 443 North Franklin Street, Suite 220, Syracuse, NY 13204
SUBJECT:	**Evidence Summary Memorandum for the Oberdorfer Site**
DATE:	October 2, 2019

1. Introduction

Revitalizing Auto Communities Environmental Response (RACER) Trust and Knauf Shaw LLP (Knauf Shaw) contacted TIG Environmental[1] to provide consulting services regarding potentially responsible party (PRP) identification and investigation, sampling and data analysis, and expert witness testimony to support RACER Trust and Knauf Shaw during litigation proceedings stemming from a Civil Action No.: 5:18-cv-1267 [DNH/ATB] filed on October 26, 2018 (the Complaint) (RACER 2018).

In the Complaint, RACER Trust, by its attorneys, Knauf Shaw LLP, brings claims for cost recovery and contribution under Sections 107(a) and 113(f) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) 42 U.S.C. 9607(a) and 9613(f), inter alia, against parties (Defendants) operating in or around the Ley Creek Watershed Site (Study Area) in Onondaga County, New York. The Complaint asserts that the Defendants are responsible to contribute to the cost of past and future investigations to address contamination in and around the Study Area.

The Study Area consists of the GM-Inland Fisher Guide Facility (GM-IFG) Sub-Site Operable Unit 1 (OU-1), the expanded OU-2 area (Ley Creek from Townline Road west to Route 11, including creek banks and limited floodplain and hotspot areas), and tributaries upstream of Townline Road bridge. As defined in the Record of Decision (ROD) for OU-2, the identified contaminants of concern (COCs) at the Site are polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), chromium, copper, lead, nickel, and zinc. PCBs are the predominant contaminants in Ley Creek sediments (NYSDEC and EPA 2015).

[1] TIG Environmental is a member of The Intelligence Group, LLC.

Evidence Summary Memorandum for the Oberdorfer Site

In this evidence summary memorandum (ESM), TIG Environmental reviewed evidence gathered by RACER Trust and Knauf Shaw to evaluate the following for each Defendant's site:

- Documented and suspected PCB usage at the Defendant's site
- The existence of PCB-containing electrical equipment or electrical substations (utility- or Defendant-owned) on Defendant's site
- Whether pathways exist between the Defendant's site and the Ley Creek watershed (defined as Ley Creek and its tributaries)

Sections 2 through 4 summarize the available information on Defendant operations related, or potentially related, to PCB usage; detections of contaminants at or related to the Defendant site; permits, waste handling, spills, and/or releases at each Defendant's site; whether pathways from the Site to Ley Creek watershed can be determined; data gaps; and proposed sampling to address identified data gaps. Defendant information, site ownership information, and dates of operation for the Defendant's site are available in Knauf Shaw's site dossier (Knauf Shaw Oberdorfer Site Dossier).

2. Description of Site Operations Related to PCBs

From 1921 until 2013, Oberdorfer Foundries (Oberdorfer)[2] operated a foundry that cast brass, bronze, aluminum, and magnesium components of engine assemblies at 6200 and 6259 Thompson Rd. Oberdorfer also manufactured small centrifugal pumps. Specific operations include die casting, sand molding, core fabrication, metal melting and pouring, and metal cleaning and machining. (FOIL248845 at FOIL248867; FOIL248839; FOIL247916 at FOIL247924; Knauf Shaw Oberdorfer Site Dossier, 1). Operations or waste materials at the Oberdorfer Aluminum Site (the Site) related to PCBs include the following: foundry operations, recycling of spent foundry sands (SFSs), waste disposal, transformer use, and demolition operations.

Foundry Operations

Waxes used in investment and other casting mold processes (such as die casting, sand molding, and core fabrication) are associated with decachlorobiphenyls (DecaCB), a PCB product imported from Italy and associated with PCB congener 209 (EPA 1976, 27, City of Spokane 2015, 2; EPA 1977, 55). In 1976, annual United States commercial use of die casting wax containing DecaCB was estimated at 13 to 22 million metric tons per year (Erickson and Kaley 2011, 10). By 1977, PCBs were no longer used for casting operations (EPA 1977, 55). Although site inventories are not available to confirm the use or storage of DecaCB at the Site, the time period and description of Oberdorfer operations indicates that DecaCB was likely used at the Site.

The type of furnace used at the Site is not disclosed in reviewed documents; however, electric arc furnaces (EAFs) were common at the time. The use of EAFs in foundries for the production of steel results in the

[2] Numerous entities have operated at the Site for 92 years, from 1921 until 2013 including Oberdorfer Foundries, Inc.; Oberdorfer, LLC; Gardner Denver, Inc.; and Oberdorfer Pumps, Inc. For the purposes of this report, all references made to Oberdorfer refer to one or more of these entities.

generation of contaminants like PCBs and polychlorinated dibenzo-p-dioxin/dibenzofurans (PCDD/Fs) in the dust produced by the furnace that can be transported by aerial emissions (Cappelletti 2016, 2, Aries 2008, 3; Wu et al. 2014 at pp. 1–2; Kakareka and Kukharchyk, 2005, 5; Dyke 1998, 37). Because the PCBs generated by an EAF are not being intentionally produced, the specific PCB congeners associated with each particular furnace are unknown. Studies of PCBs generated by furnaces and incinerators have identified a wide range of congeners (Dyke 1998, 15, 20–23, 27). Further, because this process is inadvertent, melting of scrap metal in EAFs continues to pose a human health and environmental risk despite the ban on PCB manufacture (Jackson et al. 2011, 1; Cappelletti et al. 2016, 1–2; Kuzu et al. 2013, 3). PCB congeners have also been detected in aerial emissions from coal-fired boilers, meaning that emissions of PCBs are not limited to plants equipped with EAFs (Grochowalski and Konieczyński 2008, 1, 5). Additionally, low concentrations of PCB congeners can be found in spent foundry sands (SFSs) formerly used in aluminum foundry operations (Dungan, Huwe, and Chaney 2009, 2).

Recycling of Spent Foundry Sands

In the foundry and metal casting industries, sands are sometimes combined with resins and clays to produce metal casting molds (Dungan, Huwe, and Chaney 2009, 1). When the sand mold is exposed to high temperatures as molten metal is poured into the mold, PCBs may be generated (Dungan, Huwe, and Chaney, 2009, 1–2). At the end of its lifecycle, the waste sand, also known as spent foundry sand (SFS) is frequently landfilled or used in other applications as fill (Dungan, Huwe, and Chaney 2009, 1–4). Low concentrations of PCBs have been detected in SFS (Dungan, Huwe, and Chaney 2009, 1–4).

Beginning in 1945, SFS were disposed of at two onsite landfills. At some point after 1991 and prior to 2011, Oberdorfer began to stockpile the SFS in six piles surrounding the outside of the main building instead of in the landfills. Oberdorfer sampled these six piles (totaling 16,000 tons) five times from 2011 to 2014 to apply for a Beneficial Use Determination (BUD) for re-use of the SFS for sub-grade fill onsite (Knauf Shaw Oberdorfer Site Exhibit H, 9–10, 97–101, 121–133, 136–143). This sampling event did not include analysis for PCBs, but Oberdorfer collected a second round of samples in 2014 from Pile A only and analyzed them for PCB Aroclors. Seven Aroclors were analyzed and concentrations of each were below the laboratory detection limit of 0.0638 micrograms per gram (µg/g) (0.0638 ppm) (FOIL247752; FOIL247779). Only one foundry in the United States continued to use DecaCB in investment casting wax in 1977. Therefore, the lack of detected PCB concentrations in 2014 does not indicate that PCB-containing waxes were never used at the Site, but rather that there is no sampling data for the period when these waxes would have been used (EPA 1977, 13). Available documents do not indicate why pile A was analyzed for PCBs or whether the remaining five piles were analyzed for PCBs.

NYSDEC approved the BUD application in November 2014 and required Oberdorfer to remove all unused SFS from the Site following use as sub-grade fill (FOIL247835 at FOIL247836). Reviewed documents do not indicate where the SFS was eventually used or whether all of the unused SFS was removed from the Site.

Waste Disposal

Since 1945, Oberdorfer had disposed of used process materials at two unlined onsite landfills. The waste materials included spent foundry sands, molding sands, contaminated sand, refractory linings, bentonite and binder clay, metal oxides, metal scraps, A-1 fines, and baghouse dust (Knauf Shaw Oberdorfer Site Dossier,

1). Reviewed documents do not indicate how or where waste products were disposed of between 1921 (when site operations began) and 1945 (when the landfills were constructed). Oberdorfer filled, graded, and revegetated one landfill prior to 1986, while the other landfill remained active. The active landfill received various grades of SFS that contained different phenolic resins that acted as chemical binders for the sand molds and included phenol-formaldehyde, phenol-isocyanate, phenol-urea, and sodium-silicate (Knauf Shaw Oberdorfer Site Dossier, 1). In March 1991, NYSDEC sampled the two landfills at the Site and analyzed the samples for PCB Aroclors[3] 1016, 1221, 1232, 1242, 1248, 1254, and 1260. Results indicated Aroclor concentrations in all samples collected from the two landfills were below the detection limit of 80 parts per billion (ppb) (FOIL249473 at FOIL249474, 483, 489). Because the depth of the samples in the piles is unknown, whether the samples for the SFS are representative of the period during which PCBs are most likely to be detected is also unknown. The soils onsite contain a high percentage of sand and thus high infiltration rates and low volumes of runoff; however, runoff direction is towards South Branch Ley Creek and therefore any runoff from the Site would eventually reach South Branch Ley Creek (Knauf Shaw Oberdorfer Site Exhibit A, 17).

Transformer Use

Sanborn maps dated April 1966 for the Site depict a transformer room within the main foundry building (Knauf Shaw Oberdorfer Site Exhibit B). Large electric furnaces require the use of transformers to increase, adjust, and maintain electrical currents to power the furnaces. Historically, these transformers were typically PCB-filled (EPA 1976, 256; Erickson and Kaley 2011, 8–9). Each transformer may contain up to 3,000 gallons of oil comprised of 40 to 60% PCBs (EPA 2004, 58). Specifically, transformers used to power electric furnaces each contained 900 to 1,800 kg of PCB-containing fluid (Erickson and Kaley 2011). NYSDEC confirmed the use of transformers at the Site during a 1984 State Pollutant Discharge Elimination System (SPDES) compliance inspection in which the inspector noted that, near a site scrap metal pile, two transformers appeared to be leaking. Oberdorfer analyzed the oil-soaked soil surrounding the transformers for all nine PCB Aroclors, and concentrations of each Aroclor were below the detection limit of 1.0 milligrams per kilogram (mg/kg) (1.0 ppm) (FOIL249001 at FOIL249003–005, 010). No additional information is available regarding the exact location of this scrap metal pile, or any further sampling or cleanup that may have been conducted.

2.1 Discharge Permits, Waste Handling, and/or Spills at the Site

2.1.1 Discharge Permits

Oberdorfer first applied for a permit to discharge process water with the U.S. Army Corps of Engineers (USACE) in January 1972 and applied for an SPDES permit (#NY0003026) with NYSDEC in 1974. (FOIL248845). Oberdorfer listed in the application that it produced 1,000 to 4,999 gallons a day (gal/day) of

[3] Beginning in 1935, Swann Chemical Company, followed by the Monsanto Company, produced commercially available PCB-containing goods in a line of products known as “Aroclors.” Each of the 10 common PCB Aroclor mixtures are generally associated with certain signatures of PCB congeners (there are 209 PCB congeners) (Erickson and Kaley 2011, 2–3). The style of reporting analytical data for PCBs varies in reviewed documentation. Results may be reported as individual Aroclors and/or congeners, as a sum of all or some of these analytes, or simply as “PCBs.” For purposes of this memorandum, TIG Environmental will state “total PCBs” when the source document has reported analytical results as either “PCBs” or “total PCBs.” This is presumed to represent the sum of PCB Aroclors or congeners. TIG Environmental will report Aroclor- or congener-specific data where that information is available.

cooling water and 10,000 to 49,999 gal/day of process waste water, all of which was eventually discharged via three outfalls (001, 003, and 004) to South Branch Ley Creek (FOIL248845 at FOIL248860–861). The discharged water was not analyzed for PCBs at this time.

Outfall 001 received combined process wastewaters from spray process castings, Zyglo[4] testing, casting impregnation, immersion testing, and X-ray processing.[5] This outfall also received water from the casting quenching tank and the rotoclone[6] air cleaner. All of the aforementioned process water was contained in a settling pond prior to discharge via outfall 001; however, reviewed files do not contain maps or figures noting the location of this outfall (FOIL248845 at FOIL248875).

Outfall 003 received outflow from the emergency fire water supply reservoir and outfall 004 received outflow from die cooling water (FOIL248845 at FOIL248867, 887, 897). According to Sanborn and operator-provided maps, the 120,000-gallon (gal) fire water supply reservoir was located in the northwest corner of the Site (Knauf Shaw Oberdorfer Site Exhibit B; FOIL248845 at FOIL248906). As a part of Oberdorfer's site pollution abatement program in 1977, consultants Flint and Sherburne Associates detailed a plan to install a new, raised settling tank along the western side of the building directly east of the emergency fire water supply reservoir, and indicated that this fire water supply reservoir would receive input water from the new settling tank (FOIL249227 at FOIL249265, 288). There is no record of sampling in or around this reservoir and no information regarding whether it was lined or raised.

By 2006, Oberdorfer listed outfall 003 as discharging non-contact cooling water from the former fire water supply reservoir (noted in supporting documentation as a "pond") into South Branch Ley Creek. Oberdorfer listed outfall 004 as discharging stormwater only from the north roof of the main building to South Branch Ley Creek (FOIL247916 at FOIL247921–923). Oberdorfer held this SPDES permit until the facility closed in May 2013 (FOIL248839).

Following the 1984 facility inspection, NYSDEC required that Oberdorfer submit monthly monitoring reports instead of annual reports due to its numerous violations of daily limits of suspended solids, dissolved oxygen, oil and grease, and zinc in outfalls 001 and 004. PCBs were not included in the list of required monitoring parameters (FOIL249001 at FOIL249010). The numerous exceedances are an indication of poor housekeeping practices, and although NYSDEC did not require Oberdorfer to monitor effluent for PCBs, it is likely that the housekeeping practices employed to manage any PCB-containing materials onsite would have been equally as poor.

Water process diagrams for the Site from the 1970s indicate that Oberdorfer used a heat transfer system at some point during the Site's operating history; however, the volume of water used to cool this system is not

[4] Zyglo is a dye used to detect imperfections or cracks in a casting; the finished casting is dipped in the Zyglo fluorescent dye and analyzed under ultraviolet light for imperfections (FOIL248845 at FOIL248845). Zyglo is a registered trademark of the MAGNAFLUX Corporation (MAGNAFLUX Corporation 2014a). The pigments used in Zyglo dyes are white and mineral based, and not Azo or Phthalo pigments, indicating these pigments likely do not contain PCBs (Hu and Hornbuckle 2010, 2; MAGNAFLUX Corporation 2014b; MAGNAFLUX Corporation 2015).

[5] X-ray imaging is commonly used in casting operations as a non-invasive method for detecting internal imperfections in the cast products (Godfrey and Wing, Inc., 2018).

[6] The Rotoclone air cleaner system is a wet dust collection system that coats the filter blades in a fine film of water to collect dust particles. Rotoclone is a registered trademark of American Air Filter, Inc (American Air Filters, Inc, 2016).

disclosed in reviewed documents (FOIL249227 at FOIL249235). Heat exchange systems from the 1960s and 1970s, described as “semi-closed systems,” may have used PCB-containing oils (EPA 1976, 163). PCB Aroclors 1248 and 1254 are associated with heat exchange systems (Erickson and Kaley 2011, 10). Heat transfer systems are technically closed systems; however, many leaked during their operating tenure and, therefore, were re-named “normally closed” or “nominally closed” systems (WHO 2015, 79; EPA 1976, 227). Therefore, it is likely that cooling water used within these “nominally closed” systems contacted PCB-containing material and thus contained PCBs.

2.1.2 Waste Handling Related to PCBs

In April 2004, NYSDEC inspected the Site to determine compliance with the New York State Industrial Hazardous Waste Management Law. The inspector noted that the disposal practices employed during waste management operations were inadequate and that four fluorescent bulbs were not properly “containerized” (FOIL248854 at FOIL248864).

During a 2014 health and safety pre-demolition inspection, the consultant from the firm hired to complete the demolition noted that the facility contained “ballasts,” likely fluorescent light ballasts, that were improperly disposed of and potentially contained PCBs. Broken fluorescent lights were listed as an additional safety hazard and, therefore, it is assumed that the ballasts are associated with fluorescent lights. The report does not specify how these ballasts were removed or disposed of (FOIL247812 at FOIL247812). Fluorescent light ballasts historically contained small PCB capacitors. These capacitors released small amounts of PCBs into the air during regular use and released larger amounts when they leaked or ruptured when installed for a period longer than the intended lifespan (EPA 2017). PCB Aroclors 1242 and 1016 are associated with fluorescent light ballasts (Erickson and Kaley 2011, 10). A review of available aerial photographs indicates that all buildings at the Site were demolished by May 2015 (Google Earth 2019).

2.1.3 Spills Related to PCBs

In addition to the transformer leak described previously, several releases of unspecified oil have been documented at the Site between 1993 and 2013 (Knauf Shaw Oberdorfer Site Exhibit D).

2.2 PCB Discharges to Ley Creek or Tributaries

This section discusses the documented or potential discharge pathways of PCBs from the Site, with emphasis on discharges to Ley Creek or its tributaries.

2.2.1 Direct Discharge

This section discusses the documented or potential PCB-containing direct discharges from the Site to Ley Creek or its tributaries.

Prior to 1974, Oberdorfer discharged all of the process wastewater and cooling water produced during site operations–at a rate of 43.81 gallons per minute, four to five days a week–into South Branch Ley Creek via outfalls 001, 003, and 004 (FOIL248845 at FOIL248846). The process wastewater generated during site activities was never sampled or analyzed for PCBs; however, an EPA case study of PCB concentrations in miscellaneous industrial wastewater effluents in Wisconsin determined that die casting effluent from foundry

operations can contain PCB concentrations up to 32.2 ppb (EPA 1976, 436). In 1977, outside consultants proposed re-routing the process wastewater for Oberdorfer operations following changes in SPDES effluent requirements that necessitated a more involved pollution abatement program (FOIL248910). After these changes were complete, the only water supposedly discharging to South Branch Ley Creek as of the 1981 permit renewal included non-contact cooling water and stormwater runoff. However, the peak period of PCB use at the Site would have been prior to 1977; therefore, it is likely that any PCB releases from the Site would have occurred prior to this change (FOIL249172 at FOIL249172–174).

Even after process discharges reportedly ceased sometime between 1977 and 1981, water discharging from the Site still contained concentrations of individual Aroclors when Oberdorfer sampled the effluent in 1993, indicating that PCBs were still being discharged from the Site to South Branch Ley Creek (FOIL249073 at FOIL249074). During the January 1993 annual facility inspection, the NYSDEC inspector noticed an "unpermitted industrial discharge" at the southern end of the facility near the SFS storage area and noted his concern that this discharge water potentially included leachate from the site landfills. He then required the facility to add this discharge onto the permit as a new outfall (006) and test the effluent for six parameters, including total PCBs at a detection limit of 0.065 "ppt"[7] (65,000 ppb) (FOIL248722 at FOIL248722–723). The described location of this unpermitted discharge and outfall 006 is vague, but it is generally located along the 1993 southern property line near the "waste storage area;" the NYSDEC inspector does not clarify which waste storage area. Oberdorfer sampled and analyzed the effluent from outfall 006 in September 1993 for PCB Aroclors 1016, 1221, 1232, 1242, 1248, 1254, 1260, and total PCBs. The effluent sample contained PCB Aroclor 1248 at a concentration of 0.27 micrograms per liter (µg/L) (0.27 ppb) (FOIL249073 at FOIL249074). The site engineer stated in the letter that accompanied these results to NYSDEC that the majority of the unpermitted effluent discharged to the new "outfall 006" originated on the Roth Brothers Smelting Company[8] access road, which runs adjacent to the Site (FOIL249073). In March 1996, following a change in ownership and property lines, NYSDEC removed outfall 006 from the SPDES permit, meaning that any effluent discharged from this outfall was no longer Oberdorfer's responsibility (FOIL249050 at FOIL249066–067). Discharges to this outfall that occurred after 1996 are unknown.

2.2.2 Sanitary Sewer

This section discusses the documented or potential PCB-containing discharges from the Site via sanitary sewers.

After 1974, Oberdorfer proposed attaching the process water settling tank–which received water from the processes described in Section 2.1–to the municipal sanitary sewer system instead of allowing all process water to discharge into South Branch Ley Creek (FOIL248845 at FOIL248846). It is unclear whether this planned re-route to the sanitary sewer occurred as described in 1974; however, all permits after 1981 indicate that the only water discharged directly to South Branch Ley Creek was non-contact cooling water

[7] It is unclear whether this value intends to reflect parts per trillion or per thousand. 0.065 parts per thousand is equivalent to 65,000 parts per billion, 0.065 parts per trillion is equivalent to 0.000065 parts per billion.

[8] The Roth Bros Site lies immediately adjacent to the western boundary of the Oberdorfer Site, and the access road runs adjacent to the southern boundary of the Oberdorfer Site. The Roth Bros Site was required by NYSDEC to monitor for PCB Aroclors and total PCBs in effluent and exceeded the maximum daily limits for PCB Aroclors 1242 and 1248 several times between 1991 and 1994 (FOIL207154 at FOIL207162, 163).

and stormwater, which indicates that the process wastewater was likely re-routed to the municipal sanitary sewer system at some time between 1974 and 1981.

2.2.3 Storm Sewer

Reviewed documents do not discuss any discharges to storm sewers.

2.2.4 Runoff

This section discusses the documented or potential PCB-containing discharges from the Site to Ley Creek or its tributaries via stormwater runoff.

The Site lies within the drainage basin for South Branch Ley Creek, and the surface of the inactive landfill slopes at approximately six percent (Knauf Shaw Oberdorfer Site Exhibit A, 17). All of the site surface drainage appears to be toward South Branch Ley Creek; however, this has not been extensively studied. A site assessment conducted in 1986 indicates that site soils have a high sand content which would likely cause any surface runoff to be minimal as the water would be absorbed into the soil (Knauf Shaw Oberdorfer Site Exhibit A, 17, 123, 132).

2.2.5 Groundwater

This section discusses the documented or potential PCB-containing discharges from the Site to Ley Creek or its tributaries via groundwater.

Direct discharges of PCBs to groundwater have not been documented at the Site; however, a potential pathway for contaminants to leach from the unlined site landfills to site groundwater does exist. Oberdorfer installed three monitoring wells in 1986 at the “inactive” landfill to determine groundwater flow direction; however, results were inconclusive (Knauf Shaw Oberdorfer Site Exhibit A, 60, 63–65). Following sampling and analysis of groundwater in 1986 when consultants installed three monitoring wells (Knauf Shaw Oberdorfer Site Exhibit A, 65), NYSDEC reported that concentrations of phenolic compounds, associated with the phenolic resins used to bind the foundry sands, in groundwater were higher than New York State groundwater and surface water standards for Ley Creek, both as defined by NYSDEC (Knauf Shaw Oberdorfer Site Exhibit A, 20–21, 36). This indicates that a potential pathway for contaminants exists from the landfill to groundwater. If the SFSs in the onsite landfill contain PCB concentrations high enough to leach out of the landfill, then PCBs could also be present in groundwater at the Site; however, no supporting data for either South Branch Ley Creek or local groundwater exists to conclude that there is a pathway from groundwater to surface water.

3. Data Gaps

TIG Environmental has identified the following data gaps that would increase the understanding of how PCBs were used onsite and/or released from the Site.

- According to correspondence between the site managers and NYSDEC in 2014, NYSDEC approved Oberdorfer’s application to re-use SFSs stored onsite as sub-grade fill and required Oberdorfer to remove any remaining unused SFS from the Site. NYSDEC required a report to be submitted following the completion of construction activities involving the re-use of SFS and required that this report include

as-built drawings indicating where the SFS was used. Since NYSDEC required Oberdorfer to submit this report, TIG Environmental presumes that it was submitted to NYSDEC; however, it was not provided in reviewed documentation. SFSs historically contained PCBs, and if the SFSs that Oberdorfer re-used at the Site also contained PCBs, they are potentially contributing to PCB contamination in Ley Creek. This report would provide the locations of the re-used SFSs in order to determine whether they continue to be a source of PCBs to Ley Creek.

  - Recommendation: Request the 2014 completion report from NYSDEC.

- Several samples were collected from the SFS piles from 2011 to 2014. The only data available in provided documents was for the northwest portion of Pile A. Additional sampling results are needed to identify the presence of PCBs in SFS used onsite.
- Limited data regarding groundwater flow direction exists for the Site. In order to draw a conclusion about whether site groundwater is a pathway for PCBs to reach Ley Creek, groundwater flow direction and PCB concentrations in groundwater need to be further evaluated.
- According to NYSDEC, the only onsite outfall analyzed for PCBs was outfall 006. The location given by NYSDEC for outfall 006 is imprecise; therefore, TIG Environmental' s ability to assess the nature of PCB sources to outfall 006 is limited.
- Site SPDES documents indicate that, prior to 1974, process water was routed through a settling tank before being discharged to Ley Creek via outfalls 001, 002, and 003. The nature and location of this settling tank is unknown; therefore, its role in discharging PCBs to Ley Creek cannot be accurately determined.
- Sanborn maps indicate that the Site was historically used as a foundry; however, no specific information regarding the nature of operations at this particular foundry is available. General industry documentation suggests that, depending on the specific nature of foundry operations, PCBs may be associated with casting waxes, SFS, or EAFs. Each of these operations may imply associations with different PCB Aroclors or discharge pathways. The assessment of the most likely uses of PCBs onsite and associated discharge pathways is limited by a lack of information about specific foundry operations.

4. Proposed Sampling to Assess Contributions to the Study Area

Because of the data gaps identified in Section 3, TIG Environmental proposes additional sampling at the Site, as described below. The sampling locations should be analyzed for PCB Aroclors (EPA Method 8082A), PCB congeners (EPA Method 1668C), total organic carbon (Lloyd Kahn method), grain size (ASTM D422), and total solids (ASTM D2216-98). In addition to those parameters, TIG Environmental may also propose sampling for particular contaminant classes (that is, metals, PAHs, volatile organic compounds [VOCs], and semivolatile organic compounds [SVOCs]), depending on the nature of operations surrounding a particular sampling location.

4.1 Soil

Potential soil sampling locations include the locations of the two former site landfills, as well as the area where the SFS was eventually re-used as sub-grade fill material (once the location of this placement is identified).

4.2 Sediment

Potential sediment sampling locations include the location of temporary outfall 006 that contained concentrations of PCB Aroclor 1248 at a concentration of 0.27 µg/L (0.27 ppb) when sampled (FOIL249073 at FOIL249074). The location of outfall 006 is a data gap.

Additionally, process water was discharged from outfalls 001, 003, and 004 until sometime between 1977 and 1981, during the peak era of PCB use nationwide (FOIL248845 at FOIL248846; FOIL249172 at FOIL249172–174). Sampling in the vicinity of these outfalls is proposed, as well as in or around the reservoir identified as discharging to outfall 003 on 1974 site maps (FOIL248845 at FOIL248906). Sediment sampling should occur in the sections of South Branch Ley Creek where outfalls 001, 003, and 004 discharged process wastewater until the late 1970s, as was previously described.

4.3 Groundwater

Potential groundwater sampling locations include the location where the SFS was eventually re-used as sub-grade fill material, where the SFS was originally piled, and areas surrounding the former landfills.

5. References

This ESM was prepared using the evidentiary materials listed below and provided with this document.

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